

Appl. No. 10/800,455
Atty. Docket No.: 2004B019
Restr. Requirmt. dated February 20, 2007
Response to Restr. Requirmt. of 1/17/2007

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in this application.

Listing of Claims:

1. (Original): A nanocomposite, comprising organo-clay and at least one thermoplastic polyolefin comprising stabilization functionality.
2. (Original): The nanocomposite of claim 1, wherein said organo-clay is selected from one or more of montmorillonite, sodium montmorillonite, calcium montmorillonite, magnesium montmorillonite, nontronite, beidellite, volkonskoite, laponite, hectorite, saponite, sauconite, magadite, kenyaite, sobockite, svindordite, stevensite, vermiculite, halloysite, aluminate oxides, hydrotalcite, illite, rectorite, tarosovite, ledikite or florine mica.
3. (Original): The nanocomposite of claim 2, wherein said organo-clay further comprises one or more of ammonium, primary alkylammonium, secondary alkylammonium, tertiary alkylammonium quaternary alkylammonium, phosphonium derivatives of aliphatic, aromatic or arylaliphatic amines, phosphines or sulfides or sulfonium derivatives of aliphatic, aromatic or arylaliphatic amines, phosphines or sulfides.
4. (Original): The nanocomposite of claim 3, wherein said organo-clay is present in said nanocomposite from 0.1 - 50 wt% of said nanocomposite.
5. (Original): The nanocomposite of claim 1, wherein said stabilization functionality is selected from one or more of phenols, ketones, hindered amines, substituted phenols, substituted ketones, substituted hindered amines, or combinations thereof.
6. (Original): The nanocomposite of claim 1, wherein said nanocomposite optionally further comprises at least one elastomeric ethylene-propylene copolymer.
7. (Original): The nanocomposite of claim 6, wherein said nanocomposite optionally further comprises at least one non-functionalized thermoplastic polyolefin.

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8. (Original): The nanocomposite of claim 1, wherein the heat aged failure of a molded sample of said nanocomposite is at least 10% higher than a reference nanocomposite comprising the same elements except that the thermoplastic polyolefin is substantially free of stabilization functionality.

9. (Original): The nanocomposite of claim 7, wherein the heat aged failure of a molded sample of said nanocomposite is at least 10% higher than a reference nanocomposite comprising the same elements except that the thermoplastic polyolefin is substantially free of stabilization functionality.

10. (Original): The nanocomposite of claim 1, wherein the stabilization functionality is present in the thermoplastic polyolefin at from ≥ 0.01 to ≤ 15 wt% based on the total weight of the thermoplastic polyolefin.

11. (Original): The nanocomposite of claim 1, further comprising a non-functionalized thermoplastic polyolefin that is miscible with the thermoplastic polyolefin comprising stabilization functionality.

12. (Original): The nanocomposite of claim 11, wherein the non-functionalized thermoplastic polyolefin is present in the nanocomposite from ≥ 1 to ≤ 40 wt%, based on the total weight of said nanocomposite, and the organo-clay is present in the nanocomposite from ≥ 0.5 to ≤ 40 wt%, based on the total weight of the said nanocomposite.

13. (Original): The nanocomposite of claim 12, wherein the thermoplastic polyolefin comprising stabilization functionality and the non-functionalized thermoplastic polyolefin each comprise one of polypropylene or polyethylene.

14. (Original): A nanocomposite, comprising:

a) at least one first non-functionalized polypropylene present in the nanocomposite at from ≥ 10 to ≤ 98 wt%, based on the total weight of the nanocomposite;

b) at least one second polypropylene comprising stabilization functionality, said stabilization functionality selected from one or more of phenols, ketones, hindered amines, substituted phenols, substituted ketones, substituted hindered amines, or combinations thereof,

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and said stabilization functionality being present in said stabilization functionalized polypropylene from ≥ 0.05 to ≤ 15 wt%, based on the total weight of said of the polypropylene comprising stabilization functionality, where the second polypropylene comprising stabilization functionality is present in said nanocomposite at from ≥ 10 to ≤ 90 wt. %, based on the total weight of the nanocomposite;

c) an organo-clay selected from one or more of montmorillonite, sodium montmorillonite, calcium montmorillonite, magnesium montmorillonite, nontronite, beidellite, volkonskoite, laponite, hectorite, saponite, sauconite, magadite, kenyaite, sobockite, svindordite, stevensite, vermiculite, halloysite, aluminates, hydrotalcite, illite, rectorite, tarosovite, ledikite or fluorine mica, and wherein said organo-clay is present in said nanocomposite from ≥ 1 or ≤ 30 weight %, based on the total weight of the nanocomposite, and where the nanoclay further comprises one or more of hexyl ammonium ion, octyl ammonium ion, 2-ethylhexyl ammonium ion, dodecyl ammonium ion, octadecyl ammonium ion, dioctyl dimethyl ammonium ion, trioctyl ammonium ion, distearyl ammonium ion, ammonium salt, pyridinium salt, sulfonium salt, phosphonium salt; and

d) optionally, an ethylene-propylene elastomeric copolymer or an isobutylene rubber present in the nanocomposite at ≥ 2 to ≤ 70 wt%, based on the total weight of the nanocomposite.

15. (Original): A blend comprising an organo-clay and at least one stabilization functionalized thermoplastic polyolefin represented by the formula:



wherein

each R^1 is independently selected from a C_1 to C_{20} aliphatic; C_1 to C_{20} aromatic; substituted C_1 to C_{20} aliphatic; substituted C_1 to C_{20} aromatic; C_1 to C_{20} aliphatic ester; C_1 to C_{20} aliphatic ether; C_1 to C_{20} aliphatic amide; C_1 to C_{20} aliphatic imide;

n is the number of stabilization functional/bridging groups bound to T and is a number from 1 to 300;

G is selected from one or more of phenols, ketones, hindered amines, substituted phenols, substituted ketones, substituted hindered amines, or combinations thereof; and

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T represents a thermoplastic polyolefin.

16. (Original): A fabricated article comprising the nanocomposite of claim 1.
17. (Original): A fabricated article comprising the nanocomposite of claim 14.
18. (Original): A fabricated article comprising the nanocomposite of claim 15.
19. (Original): An automotive part or an appliance part comprising the nanocomposite of claim 14.
20. (Original): An automotive part or an appliance part comprising the nanocomposite of claim 15.